

National 5

Homework AP11

1. The rainfall (recorded in mm) in five different towns was as follows:

17 23 32 14 26

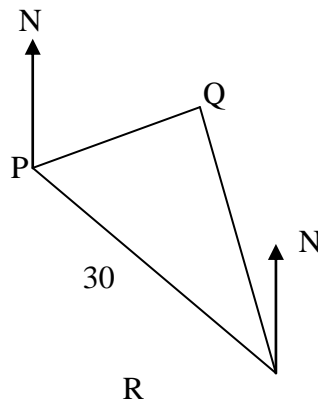
Calculate the standard deviation, correct to 1 decimal place.

3. The milk yield (in pints) from a sample of eight dairy cows was recorded.

It was found that $\sum x = 48$ and $\sum x^2 = 324$.

- (a) Calculate the sample mean and standard deviation, to 1 decimal place where appropriate.
(b) Another sample had mean 4.9 pints and a standard deviation of 2.0.
Compare the two sets of results.

4. A ship, at position P, observes a lighthouse at position Q on a bearing of 065° .
The ship travels 30 km on a bearing of 125° to position R.
From position R, the ship observes the lighthouse on a bearing of 340° .
When the ship is at position R, how far is it from the lighthouse?



5. Simplify:

(a) $\sqrt{12} + \sqrt{3}$

(b) $\sqrt{98} - \sqrt{32}$

(c) $\sqrt{20} + \sqrt{80}$

6. Express with a rational denominator:

(a) $\frac{1}{\sqrt{2}}$

(b) $\frac{2}{\sqrt{5}}$

(c) $\sqrt{\frac{8}{24}}$

7. Evaluate:

(a) $8^{\frac{2}{3}}$

(b) $4^{\frac{3}{2}}$

(c) $27^{\frac{1}{3}}$

(d) $16^{-\frac{1}{2}}$

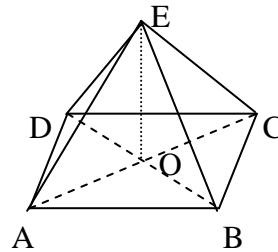
8. Evaluate, without a calculator:

(a) $1.5 + 0.5 \times 3 \cdot 8$ (b) $\frac{\frac{1}{3} + \frac{1}{4}}{\frac{1}{3} - \frac{1}{4}}$ (c) $\frac{5x}{y^2} - 2z$ when $x = 2, y = 4, z = -3$.

9. Jayne enters a two-part race.

- (a) She cycles for 2 hours at a speed of $x + 8$ kilometres per hour.
Write down an expression in x for the distance run.
- (b) She then runs for 30 minutes at a speed of x kilometres per hour.
Write down an expression in x for the distance run.
- (c) The **total** distance of the race is 46 kilometres.
Calculate Jayne's **running** speed.

10. The diagram below shows a square-based pyramid of side 200cm.
The edges AE, BE, CE and DE all measure 480cm.



- (a) Find the length of diagonal AC.
- (b) Find the height OE and hence find the volume of the pyramid.
- (c) Find the size of $\angle EAO$.
- (d) Find the size of $\angle AEO$.